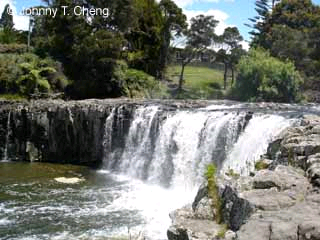
Extreme Events – volcano topic test Name:

Kaikohe Volcanic Field

A volcanic hot spot has been producing small to medium sized volcanoes in Northland for several million years. Activity began around Whangarei some 8 million years ago, and has gradually moved north and slightly to the west. The hot spot responsible for the activity is thought to be presently located inland from and below the Bay of Islands.

Intraplate volcanoes like this produce mostly **basalt** lava. Other types of lava that occur in New Zealand include **andesite** and **rhyolite.**

Picture source: http://www.world-of-waterfalls.com/new-zealand-haruru-falls.html

1. Describe how the **silica content** of basalt compares to **andesite** and **rhyolite**.

1. Several Northland waterfalls, such as Haruru Falls (above right) occur where basalt lava flows from the Kaikohe field have dammed streams. Basalt lava flows can travel quite long distances and tend to follow stream valleys.

Explain how the **properties** of basalt lava lead to this behaviour.



1. The vent of the basalt volcano which produced the lava is shown right. Name the type of feature shown in the photograph and explain how it is formed.

1. Rhyolite volcanoes are also known to produce structures that look similar to the one shown in the photo in part (c). Name these structures, and **compare and contrast** their formation to the formation of the basalt structure.



1. Basaltic fields such as Kaikohe often produce craters called **maars** (illustrated right) , which contrast with structures in rhyolitic fields called **calderas.** Compare and contrast the formation of maars and of calderas. In your answer you should refer to

* The size of the structures
* Stages in their formation
* How their formation relates to the properties of the magma and the geological setting

1. Basalt volcanism can occur both in intra-plate **hot spot** settings such as the Kaikohe one, and in **rifting** settings such as a rift valley, spreading ridge or back-arc rift such as the Taupo Volcanic Zone (where it normally makes up 1-2% of the erutions). The eruption of Tarawera in 1886 is an example of the second situation.  
   Describe and compare these two tectonic settings. In your answer refer to

* Any motion or behaviour of the crust and mantle (or lithosphere and asthenosphere)
* The main types of volcanism that occur in these two setting
* Examples of these types of volcanism in New Zealand

It would be helpful to use diagrams to illustrate your answer. Use the blank on the back of this sheet for that.